

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An engine comprising:
a housing including a pair of end walls and a pair of intersecting parallel cylinder walls having inner wall surfaces that define first and second interconnected cylindrical cavities, the intersecting cylinder walls forming spaced-apart parallel first and second edges;
first and second shafts extending coaxially in the cavities and supported for rotation at the end walls; and
first and second rotors secured to said first and second shafts for rotation in the respective cavities, the first and second rotors each having a plurality of radially extending lobes with outer ends, each lobe defining a combustion chamber that opens at the lobe outer end.
2. The engine of Claim 1, wherein the first and second shafts are coupled together for rotation in opposite directions in a synchronous manner.
3. The engine of Claim 1, wherein the lobes are cycloidal.
4. The engine of Claim 1, further comprising first and second intake ports in fluid communication with the first and second cavities, respectively.
5. The engine of Claim 4, wherein the intake ports are connected to a source of fluid.
6. The engine of Claim 5, wherein the source of fluid is supplied by a device selected from a group consisting of a turbocharger, a blower, a supercharger, and a fan.
7. The engine of Claim 5, wherein the fluid is selected from the group consisting of air and combustible fluids.

8. The engine of Claim 4, wherein the center line of the intake ports are positioned at an angle of rotation in the range of between approximately 45 degrees and approximately negative 15 degrees from the first edge.

9. The engine of Claim 1, further including at least two exhaust ports formed in the housing in fluid communication with the first and second cavities.

10. The engine of Claim 9, wherein the exhaust ports are symmetrically arranged on opposite sides of a bisecting plane coplanar with the first and second edges.

11. The engine of Claim 9, wherein the exhaust ports include beginning edges and ending edges, the exhaust ports being positioned such that the beginning edges are positioned at a selected angle of rotation clockwise and counter-clockwise from the second edge, respectively.

12. The engine of Claim 11, wherein the selected angle of rotation is approximately 110 degrees.

13. The engine of Claim 11, wherein the selected angle of rotation is approximately 80 degrees.

14. The engine of Claim 9, further comprising third and fourth exhaust ports formed in the housing in fluid communication with the pair of cavities, the third and fourth exhaust ports being symmetrically arranged on opposite sides of a bisecting plane coplanar with the first and second edges and spaced a selected distance of rotation from the first and second exhaust ports, respectively.

15. The engine of Claim 14, wherein the selected distance of rotation is approximately equal to or greater than 10 degrees.

16. The engine of Claim 1, further comprising at least one ignition device associated with the housing.

17. The engine of Claim 16, wherein the ignition device is a spark plug.
18. The engine of Claim 1, further comprising first and second air intake ports formed in the housing and in fluid communication with the cavities, the first and second air intake ports connected in fluid communication with a source of air for injecting air to the cavities.
19. The engine of Claim 18, wherein the first and second air intake ports receive the air from a turbocharger.
20. The engine of Claim 19, further comprising at least two exhaust ports formed in the housing in fluid communication with the first and second cavities, the exhaust ports further in fluid communication with the turbocharger.
21. The engine of Claim 19, wherein the first and second air intake ports receive the air from a pump driven by one of the first or second shafts.
22. The engine of Claim 18, further including first and second fuel intake ports formed in the housing and in fluid communication with the cavities.
23. The engine of Claim 22, wherein the first and second fuel intake ports are connected in fluid communication with a source of fuel.
24. The engine of Claim 23, wherein the source of fuel is a selectively controlled fuel injector nozzle.
25. The engine of Claim 23, wherein the source of fuel deliverable to the cavities is controlled by the rotation of the rotors.
26. In an engine of the type including a housing defining a pair of parallel, intersecting cylinders, and a pair of rotors affixed to parallel shafts extending coaxially in

said cylinders, each rotor having a plurality of lobes, the rotors being positioned, so that their lobes intermesh; the improvement comprising:

wherein each lobe of each rotor defines an open-ended combustion chamber.

27. An engine comprising:

a housing formed with a pair of side-by-side intersecting substantially cylindrical cavities;

a pair of counter-rotating power rotors rotatably mounted in the cavities, the pair of power rotors including intermeshing lobes each defining open ended combustion chambers;

at least two exhaust ports formed in the housing in fluid communication with the pair of cavities;

an ignition device in communication with the cavities;

first and second fuel intake ports disposed in the housing and connected in fluid communication with the cavities; and

first and second air intake ports disposed in the housing and connected in fluid communication with the cavities.

28. The engine of Claim 27, further comprising third and fourth fuel intake ports disposed in the housing and connected in fluid communication with the cavities.

29. The engine of Claim 28, wherein the third and fourth fuel intake ports are operable to inject fuel into the cavities during selected engine operating conditions.

30. The engine of Claim 27, further comprising third and fourth air intake ports disposed in the housing and connected in fluid communication with the cavities.

31. An engine comprising:

a housing defining parallel cylindrically shaped intersecting cavities;

a pair of parallel shafts rotatably mounted within the cavities, the pair of parallel shafts extending outside the housing to form at least one drive shaft; and

first and second intermeshing rotors rotatably mounted within the housing, each rotor configured with a central hub portion coupled to one of the shafts for rotation therewith and a number of radially outward extending lobes defining open ended combustion chambers.

32. The engine of Claim 31, wherein each rotor further includes a fluid supply channel formed in the central hub portion for each combustion chamber, the fluid supply channels connected in fluid communication with the respective combustion chambers, and selectively connected in fluid communication with a source of fluid.

33. The engine of Claim 32, wherein the fluid is air or fuel.

34. An engine comprising:
a housing formed with a pair of side-by-side intersecting substantially cylindrical cavities;

a pair of counter-rotating power rotors rotatably mounted in the cavities, the pair of power rotors including intermeshing lobes each defining open ended combustion chambers;

first and second intake ports formed in the housing and connected in fluid communication with the cavities and a source of air for injecting air to each combustion chamber;

third and fourth intake ports formed in the housing and connected in fluid communication with the cavities and a source of fuel for injecting fuel into each air filled combustion chamber to form an air/fuel mixture;

an ignition device coupled to the housing and substantially aligned with a respective combustion chamber when the rotor lobes are fully intermeshed, the ignition device adapted to ignite the air/fuel mixture within the aligned combustion chamber, and whereby the combusted gases resulting from the ignition of the air/fuel mixture act upon the lobes to rotate the rotors; and

at least two exhaust ports formed in the housing in fluid communication with the pair of cavities, wherein the combusted gases will subsequently escape through the exhaust ports by further rotor rotation.

35. The engine of Claim 34, wherein the exhaust ports are symmetrically arranged on opposite sides of a bisecting plane of the housing that bisects the housing at the intersection of the cavities.

36. The engine of Claim 35, wherein the first and second intake ports are configured to inject air into the cavities in a radially outward manner toward the exhaust ports.

37. The engine of Claim 34, wherein the third and fourth intake ports are configured to inject fuel into the cavities toward the chamber walls of the cavities.